

**OCCUPATIONAL SAFETY  
AND HEALTH STANDARDS BOARD**

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**NOTICE OF PROPOSED MODIFICATION TO****CALIFORNIA CODE OF REGULATIONS****Energized Equipment or Systems**

On April 19, 2007, the Standards Board held a Public Hearing to consider revisions to Title 8, Section 2320.2 of the Low Voltage Electrical Safety Orders.

Pursuant to Government Code Section 11346.8(c), the Occupational Safety and Health Standards Board (Standards Board) gives notice of the opportunity to submit written comments on these standards in which modifications are being considered as a result of public comments and/or Board staff consideration.

A copy of the full text of the standard with the modifications clearly indicated is attached for your information. In addition, a summary of all comments regarding the original proposal and staff responses is included.

Pursuant to Government Code Section 11346.8(d), notice is also given of the opportunity to submit comments concerning the addition to the rulemaking file of the following documents relied upon:

1. Letter from George Hauptman, Standards Board staff to Tina Kulinovich, Federal OSHA, Region IX, by email dated March 28, 2007.
2. Table of Contents and sections from NEC NFPA 70-E-2004.
3. Federal OSHA interpretation letter dated March 12, 1998.

Any written comments on these modifications must be received by 5:00 p.m. on July 5, 2007, at the Occupational Safety and Health Standards Board, 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833. The standards will be scheduled for adoption at a future business meeting of the Standards Board.

The Standards Board's rulemaking files on the proposed action are open to public inspection Monday through Friday, from 8:00 a.m. to 4:30 p.m., at the Standards Board's office. Inquiries concerning the proposed changes may be directed to Keith Umemoto, Executive Officer at (916) 274-5721.

**OCCUPATIONAL SAFETY AND HEALTH  
STANDARDS BOARD**

Date: June 15, 2007

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Keith Umemoto, Executive Officer

**PROPOSED MODIFICATIONS**  
(Modifications are indicated by bold,  
underline wording for new language,  
and bold, ~~strikeout~~ for deleted language.)

PROPOSED STATE STANDARD,  
TITLE 8, CHAPTER 4

Amend Section 2320.2 to read:

§2320.2. Energized Equipment or Systems.

(a) Work shall not be performed on exposed energized parts of equipment or systems until the following conditions are met:

- (1) Responsible supervision has determined that the work is to be performed while the equipment or systems are energized.
- (2) Involved personnel have received instructions on the work techniques and hazards involved in working on energized equipment.
- (3) Suitable personal protective equipment and safeguards (i.e., approved insulated gloves or insulated tools) are provided and used.

**EXCEPTION: The use of Approved insulating gloves or insulated tools or other protective measures are not required when working on exposed parts of equipment or systems energized at less than 50 volts provided a conclusive determination has been made prior to the start of work by a qualified person that there will be no employee exposure to electrical shock, electrical burns, explosion or hazards due to electric arcs.**

(A) Rubber insulating gloves shall meet the provisions of the American Society for Testing Materials (ASTM) D 120-95 02a, Standard Specification for Rubber Insulating Gloves, and be maintained in accordance with ASTM F 496-02a, Standard Specification for In-Service Care of Insulating Gloves and Sleeves, which is hereby incorporated by reference.

**NOTE: The ASTM F 496-02a standard contains provisions regarding the care, inspection, testing and use of insulating gloves and sleeves. Among other requirements, this standard provides that electrical retests shall not exceed 6 months for insulating gloves and 12 months for insulating sleeves and that insulating gloves and sleeves that have been electrically tested but not issued for service shall not be placed into service unless they have been electrically tested within the previous twelve months.**

(B) Insulated tools shall meet the provisions of the American Society for Testing Materials (ASTM) F 1505-94 01, Standard Specification for Insulated and Insulating Hand Tools, which is hereby incorporated by reference.

- (4) Approved insulated gloves shall be worn for voltages in excess of 250 volts to ground.
- (5) Suitable barriers or approved insulating material shall be provided and used to prevent accidental contact with energized parts.
- (6) Suitable eye protection has been provided and is used.
- (7) Where required for personnel protection, suitable barricades, tags, or signs are in place.
- (8) Each employee who is exposed to the hazards of flames or electric arcs wears apparel that, when exposed to flames or electric arcs, does not increase the extent of injury that would be sustained by the employee. This subsection prohibits clothing made from the following types of fabrics, either alone or in blends, unless the employee can demonstrate that the fabric has been treated with flame retardant: acetate, nylon, polyester, and rayon.

PROPOSED STATE STANDARD,  
TITLE 8, CHAPTER 4

(b) After the required work on an energized system or equipment has been completed, an authorized person shall be responsible for:

- (1) Removing from the work area any temporary personnel protective equipment, and
- (2) Reinstalling all permanent barriers or covers.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

## **SUMMARY AND RESPONSE TO COMMENTS**

## **SUMMARY AND RESPONSE TO ORAL AND WRITTEN COMMENTS:**

### **I. Written Comments**

Ms. Connie Hunt, Acting Regional Administrator, Region IX, U.S. Department of Labor, by letter received April 12, 2007.

#### **Comment No. 1**

Ms. Hunt stated Federal OSHA believes the proposed exception in Section 2320.2(a)(3) would not provide protection intended by or equivalent to that found in federal standards 1910.333(a)(1) and (2), Selection and Use of Work Practices. Federal OSHA standards 1910.333(a)(1) and (2) are intended to directly address actual and recognized potential injury from burns and electric arc blasts when working on energized systems less than 50 volts. Energized systems below 50 volts can have enough current/ampereage to cause or contribute to serious injury and death.

#### **Response:**

The proposed exception to Section 2320.2(a)(3) has been modified to provide that before foregoing the use of approved insulating gloves, tools or other protective measures when working on exposed parts of equipment or systems energized at less than 50 volts, a determination be made prior to the start of work by a qualified person that there will be no employee exposure to electrical shock, electrical burns, explosion or hazards due to electric arcs.

#### **Comment No. 2**

The remainder of Federal OSHA comments were in response to a letter dated March 28, 2007, sent by George Hauptman, Standards Board staff, to Tina Kulinovich, Federal OSHA, Region IX.

In response to paragraph 2, Federal OSHA commented that the use of insulating tools would have prevented a fatal fault path from occurring. In response to paragraph 3, Federal OSHA commented that the provisions in their standards do not mandate use of insulating gloves or tools for all work below 50 volts. However, their standards require employers to evaluate the potential exposure of employees to burns and/or electric arc explosions from work on energized systems operating at less than 50 volts and implement appropriate safety related work practices, including use of insulated gloves or tools, where potential for injury exists.

Federal OSHA responded to paragraphs 4, 7 and 9 indicating that NFPA 70-E, 2004 Edition "Standard for Electrical Safety Requirements for Employee Workplaces" is a document employers can consult but does not replace Federal OSHA provisions outlined in 1910.333(a)(1) and (2). With respect to paragraph 4, Federal OSHA concluded that where there is potential for burns or electric arc blasts, appropriate safety related work practices including the use of insulated gloves and tools must be determined and utilized.

In response to paragraph 8, Federal OSHA stated that Section 2320.2(a)(3)'s "exception" would not require the use of insulated gloves below 50 volts. Federal OSHA indicated its standards do

not exclude the use of insulating gloves for hand protection at any voltage that could pose a potential hazard to employees.

### Response

See the response to comment no. 1.

The Board thanks Federal OSHA for its comments and participation in the Board's rulemaking process.

Mr. Larry Pena, Safety Manager, Southern California Edison Company (SCE), by letter dated April 11, 2007.

### Comment No. 1

The SCE supports the proposed amendments. However, SCE requested additional language consistent with similar provisions contained in the High Voltage Electrical Safety Orders (HVESO) Section 2940.6. Mr. Pena indicated that language outlining specifications for the care and testing of gloves and sleeves contained in ASTM standards allows the employer to immediately recognize its responsibilities to comply with the provisions.

### Response

The HVESO Section 2940.6(a)(4) states that the employer is responsible for the periodic visual and electrical re-testing of all insulating gloves, sleeves and blankets. The standard further states, "The following maximum re-testing intervals in accordance with the listed ASTM standards, which are incorporated by reference, shall apply." The language is worded such that it implies that the incorporation by reference of the ASTM standards in Section 2940.6(a)(4) only pertains to the listed "in-service care" electrical re-testing intervals and Sections 2940.6(a)(5) through (a)(10) list the requirements for test marking, storage and daily inspection for gloves and sleeves which are already substantially covered in the ASTM F 496-97 standard.

Mr. Pena's recommended language is based upon provisions in the HVESO Sections 2940.6(a)(4) through (a)(10). Although Sections 2940.6(a)(4) through (a)(10) are, in principal, consistent with the ASTM F 496-97 and ASTM F 496-02(a) standard, they are not identical, nor are they inclusive of all provisions outlined in the ASTM F 496 standards related to the care, use, storage and testing of rubber insulating gloves and sleeves. For example, Sections 2940.6(a)(5) through (a)(10) do not address the care and use of outer protector (leather) gloves that in most cases must be worn over the rubber glove to protect it. The HVESO also does not address provisions in the ASTM F 496-02(a) standard that provide when and under what conditions the outer protector gloves may be omitted when using the class 0 and 00 rated gloves that are common in lower voltage work covered by Section 2320.2.

The Board does not believe that including selective provisions from the HVESO would provide the employer with a comprehensive scope of requirements incorporated by reference in the ASTM F 496-02(a) standard. However, an informational "NOTE" is proposed in Section 2320.2(a)(3)(A) that would provide notice as to the maximum electrical retesting intervals for rubber insulating

gloves and sleeves and would also alert the employer that the ASTM F 496-02(a) standard contains provisions regarding the care, inspection, testing and use of insulating gloves and sleeves.

#### Comment No. 2

It should not be necessary to obtain a copy of the ASTM standard incorporated by reference in order to know what compliance is required.

#### Response

National consensus standards are incorporated by reference because the provisions contained in them are important for the health and safety of workers, but typically, the provisions are too cumbersome or extensive to practicably list in their entirety. Additionally, the ASTM standards are copyrighted documents. ASTM standards can be reviewed at reference libraries and the Standards Board office during business hours, and they can also be obtained from vendors.

The Board thanks Mr. Pena and SCE for their comments and participation in the Board's rulemaking process.

Mr. Leo Jordan, Manager, Safety and Risk Management, Pouk & Steinle, Inc., by letter received April 19, 2007.

#### Comment No. 1

The wording for Section 2320.2(a)(3) adds confusion as it can be interpreted to mean that, when working on exposed parts of energized equipment or systems above 50 volts, rubber insulating gloves are required. This contradicts Section 2320.2(a)(4) that requires rubber insulating gloves to be worn for exposure to voltages in excess of 250 volts.

#### Response

Section 2320.2(a)(4) provides that approved insulating gloves must be worn when working on energized systems at voltages in excess of 250 volts. When work is being performed on energized systems in excess of 250 volts, the employer does not have the option to use only insulating tools which are permitted at lower voltages as outlined in Section 2320.2(a)(3). With the modifications as proposed, the exception merely provides a lower threshold (exposures below 50 volts) when protection is not required provided a qualified person has made a determination that such work will not result in hazards to employees.

#### Comment No. 2

Mr. Jordan questioned how employers are to know what is required in the ASTM F 496-02(a) standard that is incorporated by reference. He stated that all requirements to be included in the standards should be clearly understandable without requiring the employer to purchase another set of standards. Incorporating a chart (showing in-service testing intervals) such as that included in the HVESO Section 2940.6(a)(4) will eliminate misunderstanding and confusion as to what is required.

## Response

An informational “Note” is proposed in the modifications for Section 2320.2 that outlines the electrical retest intervals for rubber insulating gloves and sleeves. However, the note is clear that the ASTM F 496-02(a) standard contains other important provisions. It is important for the employer to review the entire ASTM standard to know his/her obligations regarding the care, inspection, testing and use of rubber insulating gloves and sleeves.

The Board thanks Mr. Jordan for his comments and participation in the Board’s rulemaking process.

## II. Oral Comments

Oral comments received at the April 19, 2007, Public Hearing in Sacramento, California.

Mr. John Bobis, Director of Regulatory Affairs, GenCorp/Aerojet.

### Comment No. 1

Mr. Bobis requested that the Board not adopt the proposed Exception for Section 2320.2(a)(3), stating that if the “Exception” (that excludes the use of protection for energized work at less than 50 volts) is included in the proposal, it will result in a false sense of security. Many people have experienced the effects of low voltage and high amperage, such as an automobile battery, which is only 12 volts, but it has 10 amps. In the communications industry, there are battery banks, which are very low voltage, but they go up to 4,000 amps. That is very hazardous. Permitting someone to work on such systems depends upon the hazards involved. Protective equipment may not be necessary, but if a hazard exists, the standard currently requires an assessment to be made. If the hazard involved requires that a system be worked energized, then certain procedures must be developed, the employees must be properly trained and supervised, and proper equipment must be provided. This is akin to a high voltage electrical industry. The high voltage standards require very similar levels of training and analysis.

## Response

Federal OSHA made a similar statement that protective equipment is not required or mandated for all types of work on energized systems operating at less than 50 volts. However, comments from Mr. Bobis and Federal OSHA in concept indicate that an evaluation of potential hazards must be made for any potential exposure to hazards that would call for the use of protective equipment/procedures where the potential for injury exists. The exception has merit in order to establish an identifiable lower voltage threshold for protection; however, modifications are proposed that would require a determination to be made prior to the start of work by a qualified person that there will be no employee exposure to electrical shock, electrical burns, explosion, or hazards due to electric arcs.

The Board thanks Mr. Bobis for his comments and participation in the Board’s rulemaking process.